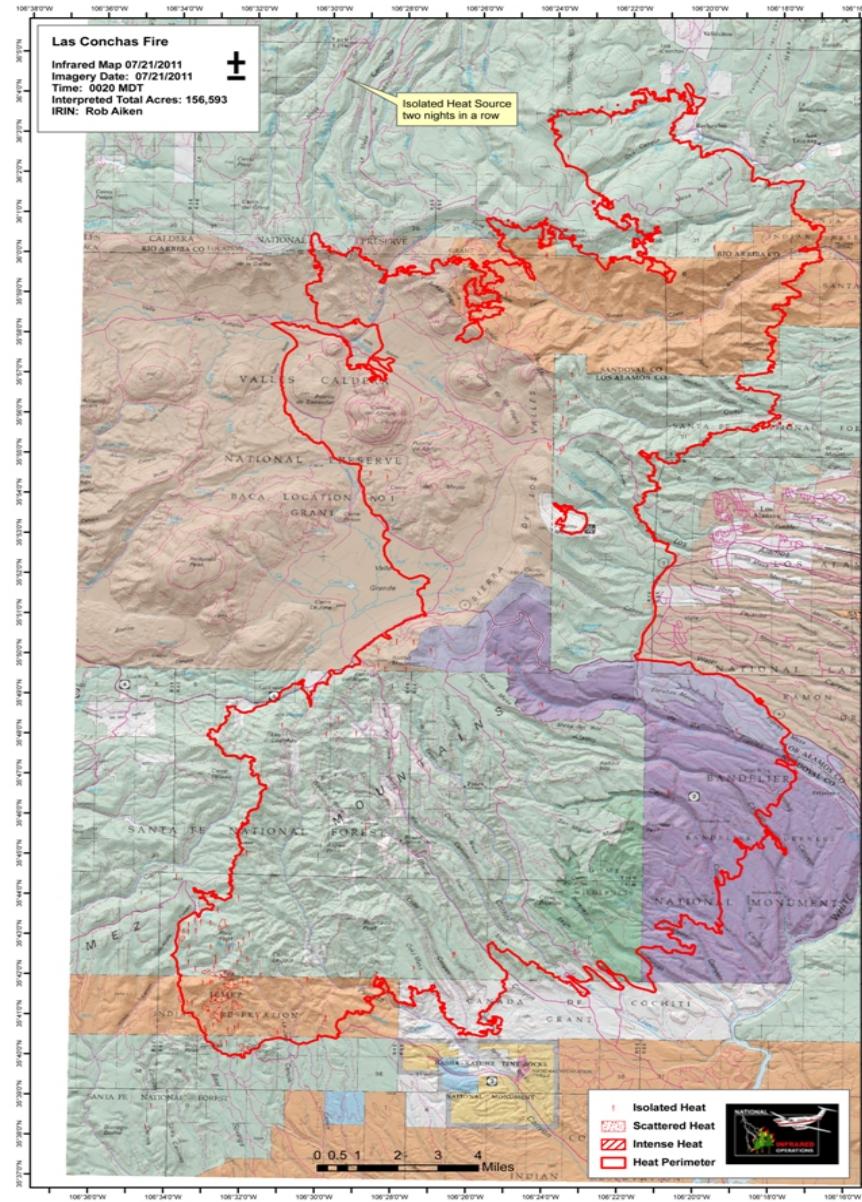


# **Using Earth Observations to Assess the Socioeconomic Impact of Human Decision Making during the Suppression of a Wildland Fire**

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Vincent Herr, Sher Schranz**

**Boulder Meeting  
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# The 2011 Las Conchas Fire (NEP)



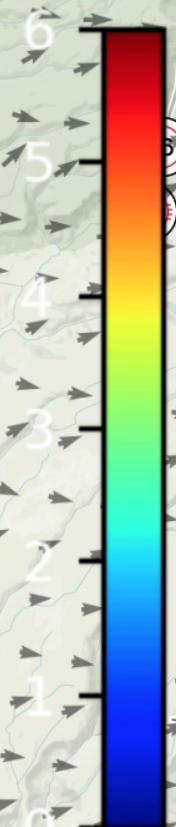


Catalog

## Active domain

- 1
- 2
- 3
- 4

blue level heat flux [log]



La Cueva

Jemez Springs

Valles Caldera  
National  
PreserveBandelier  
National  
Monument

Play

2011-06-26\_18:30:00

- MapQuest
- MQ Satellite
- OSM

## Rasters

- PSFC
- T2
- NFUEL\_CAT
- ZSF
- WINDSPD

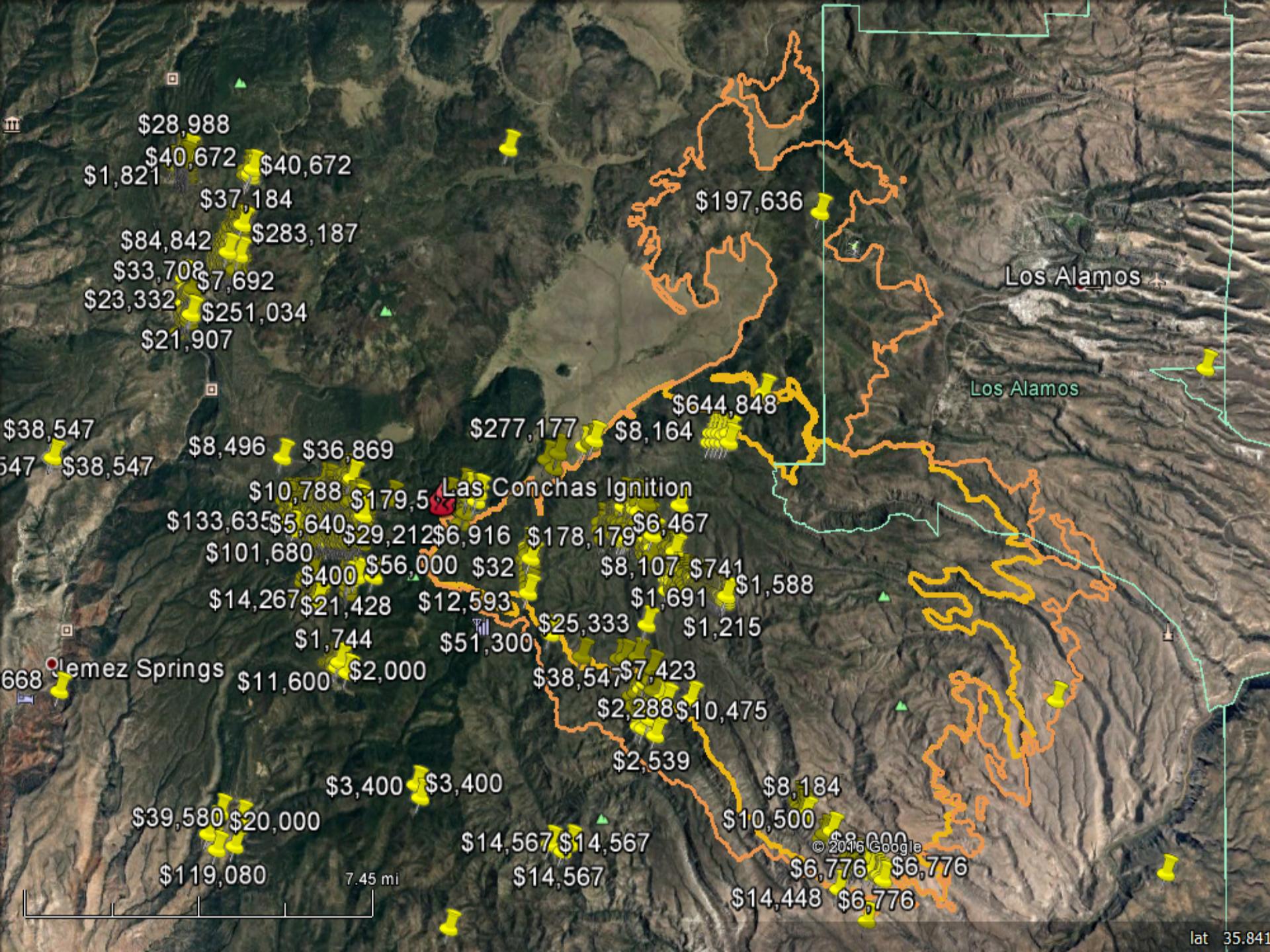
## Overlays

- SMOKE\_INT
- FIRE\_AREA
- FGRNHFX
- WINDVEC
- FLINEINT

5 km

3 mi

**If more information had been available, could the Las Conchas fire have been suppressed with less of a socioeconomic impact? To address this question, a base case and scenarios are being developed and tested with WRF-SFIRE.**



# ‘Information of Value’

Laxminarayan and Macauley (2012)—

Chapter 2, Kousky and Cooke, The Value of Information in a Risk Management Approach to Climate Change.

Chapter 4, Obersteiner, et al., Valuing the Potential Impacts of GEOSS: A Systems Dynamic Approach.

Chapter 8, Fritz, et al., The Value of Determining Global Land Cover for Assessing Climate Change Mitigation Options (specifically their simulation example of reduced acreage from wildfires using weather observations, Khabarov, 2008).

# The Base Case versus alternatives

- Scenarios—extracted by us, analyzed by the expert consultants, and then simulated by WRF-SFIRE.
  1. Base case – simulation of the actual fire, with the actual firefighting actions.
  2. Retired ICT suggests alternative firefighting actions, simulation shows the alternative consequences.
  3. Retired ICT suggests alternative actions based on forecast informed by NASA Earth observations.
- Added value of the Earth observations: decrease of socio-economic impact when the observations are used in the decisions?

# **Fire Suppression Information for the Base Case**

- IAPs
- ICS209s
- Daily Briefing Maps + GIS data
- WFDSS

# **MODIS/VIIRS Information for the Analysis**

- Fire's progression
- Vegetation
- Land Cover

# Human Decision Making

- Cues—Recognition Primed Decision Making (Klein; Gigerenzer) vs Heuristics & Biases (Kahneman and Tversky)
- RPDM affirms the effectiveness of humans interpreting cues, and H&B doubts it. They do, however, agree on the importance of cues.
- Examples of biases/errors: Values at Risk, assumes that gains and losses are equivalent, i.e. no loss aversion; and Wildfire Heuristics are accurate, e.g. Chimney Tops 2 fire for spotting and weather reports.

# Socioeconomic Outcomes

- Economic Values
- Cultural Values

# Expert Assessments for the Scenarios

- A protocol, based on WFDSS, being developed with the retired ICT consultants to support the decisions made for the scenarios.
- NEP analogy—we inflate the football (choose scenarios) and allow no film viewing of the fire (and demand full documentation and justification of scenario decisions and actions).